

**THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY
OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:**

1. A computer-implemented method of collecting and processing statistical information
relating to data transmissions between computers connected to a computer network, said method
comprising the steps of:

- (a) collecting traffic flow statistics at one or more network devices;
- (b) processing the traffic flow statistics, using a first program, to generate a first-stage
record for each data transmission, said first-stage record including:
 - (i) source IP address and destination IP address;
 - (ii) amount of data transmitted; and
 - (iii) transmission start time and end time;
- (c) transmitting the first-stage records to a second-stage data processing means having
data storage means, and storing said first-stage records therein;
- (d) sorting the first-stage records, using a second program, to generate second-stage
records corresponding to each unique combination of source IP address and
destination IP address for a selected sampling period;

(e) transmitting the second-stage records to a third-stage data processing means having data storage means, and storing said second-stage data flow records therein; and

(f) processing the second-stage records, using a third program, to generate third-stage records for each data transmission, said third-stage records including, in addition to the information contained in the second-stage records:

(i) a network identifier corresponding to the source IP address; and

(ii) a network identifier corresponding to the destination IP address.

2. The method of Claim 1 comprising the further step of processing the third-stage records, using a fourth program to generate fourth-stage records which identify a service category for each data transmission, said further step including comparing the source network identifier and destination network identifier in each third-stage record against information stored in a database which identifies the relationship between the source network and the destination network.

3. The method of Claim 1 wherein the one or more network devices includes a router.

4. The method of Claim 1 wherein the sampling period is approximately 300 seconds.

5. A computer-implemented method of billing users of a computer network for the provision of data transmission services between computers connected to the network, said method comprising the steps of:

- 5 (a) collecting traffic flow statistics at one or more network devices;
- (b) processing the traffic flow statistics, using a first program, to generate a first-stage record for each data transmission, said first-stage record including:
 - (i) source IP address and destination IP address;
 - 10 (ii) amount of data transmitted; and
 - (iii) transmission start time and end time;
- (c) transmitting the first-stage records to one or more first-stage data collectors having data storage means, and storing said first-stage records therein;
- 15 (d) sorting the first-stage records, using a second program, to generate second-stage records corresponding to each unique combination of source IP address and destination IP address for a selected sampling period;
- 20 (e) transmitting the second-stage records to one or more second-stage data collectors having data storage means, and storing said second-stage data flow records therein;

(f) processing the second-stage records, using a third program, to generate third-stage records for each data transmission, said third-stage records including, in addition to the information contained in the second-stage records:

(i) a network identifier corresponding to the source IP address; and

(ii) a network identifier corresponding to the destination IP address;

(g) processing the third-stage records, using a fourth program to generate fourth-stage records which identify a service category for each data transmission, said further step including comparing the source network identifier and destination network identifier in each third-stage record against information stored in a database which identifies the relationship between the source network and the destination computer; and

(h) assigning a billing rate, per unit of transmitted data, for each service category.

6. The method of Claim 5, further comprising the step of determining the total amount of data transmitted in each service category by a selected customer during the sampling period.

7. The method of Claim 6, further comprising the step of generating a bill corresponding to said total amounts of data transmitted in each service category, multiplied by the corresponding assigned billing rates.

8. The method of Claim 5 wherein the one or more network devices includes a router.

9. The method of Claim 5 wherein the sampling period is approximately 300 seconds.

10. A system for collecting and processing statistical information from network devices relating to data transmissions between computers connected to a computer network, so as to generate transmission-specific records for use in establishing charges to computer users for the provision of data transmission services, said system comprising:

(a) a first-stage data processing means, programmed with a first program, for receiving and processing gathering data traffic statistics from a network device to generate a first-stage record for each data transmission, said first-stage record including:

- (i) source IP address and destination IP address;
- (ii) amount of data transmitted; and
- (iii) transmission start time and end time;

(b) a second-stage data processing means, having data storage means and being programmed with a second program, for receiving and storing first-stage records from said first-stage data processing means, and for sorting the first-stage records to generate second-stage records corresponding to each unique combination of source IP address and destination IP address for a selected sampling period;

(c) a third-stage data processing means, having data storage means and being programmed with a third program, for receiving and storing the second-stage records from the second-stage data processing means, and for processing the second-stage

records to generate third-stage records for each data transmission, said third-stage records including, in addition to the information contained in the second-stage records:

- (i) a network identifier corresponding to the source IP address; and
- (ii) a network identifier corresponding to the destination IP address; and

- (d) a fourth-stage data processing means, having a data base containing loaded with reference information regarding the relationship between the source network and the destination network corresponding to each data transmission for which third-stage records have been prepared, said fourth-stage data processing means being programmed with a fourth program, for receiving and storing the third-stage records from the third-stage data processing means, and for processing the third-stage records to generate fourth-stage records which identify a service category for each data transmission.

11. The system of Claim 10 wherein the one or more network devices includes a router.

12. The system of Claim 10 wherein the first data processing means is associated with the one or more network devices.